

Case 3571***Crotalinus catenatus* Rafinesque, 1818 (currently *Sistrurus catenatus*) and *Crotalus tergeminus* Say in James, 1822 (currently *Sistrurus tergeminus*; Reptilia, Serpentes): proposed conservation of usage by designation of neotypes for both species**

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Abstract. The purpose of this application, under Articles 78.1, 78.2.3 and 81 of the Code, is to conserve the long and continuing usage of the specific name *Crotalinus catenatus* Rafinesque, 1818 (currently *Sistrurus catenatus*) for a species of pygmy rattlesnake by designation of a neotype. In addition, in order to will conserve the nearly equally long and continuous usage of the name *Crotalus tergeminus* Say in James, 1822 (currently *Sistrurus tergeminus* or *Sistrurus catenatus tergeminus*) for another pygmy rattlesnake, the Commission is asked to designate a neotype for this nominal species also. Newly found evidence indicates that the name *Crotalinus catenatus* was based on a specimen of *C. tergeminus*, and to conserve the names of both nominal taxa designation of neotypes for each is required.

Keywords. Nomenclature; taxonomy; Reptilia; Serpentes; *Sistrurus*; *Sistrurus catenatus*; *Sistrurus tergeminus*; rattlesnakes; North America.

1. Rafinesque (1818, p. 41) briefly described a new species of rattlesnake as *Crotalinus catenatus* from 'the prairies of the Upper Missouri' in the Louisiana Purchase of the United States. The name was based on a single specimen collected by John Bradbury on the Wilson P. Hunt Expedition to the Pacific Coast. This name has been used continuously since 1895 in the combination *Sistrurus catenatus* for a species of pygmy rattlesnake. In addition, the name has been used from 1936 to date for the subspecies *Sistrurus catenatus catenatus*, which ranges east of the Mississippi River (Kubatko et al., 2011, p. 3).

2. Say in James (1822, p. 499) subsequently described *Crotalus tergeminus* based on two pygmy rattlesnakes collected from an indefinite locality during the Long

Expedition to the Rocky Mountains in the western United States. This name has been continuously used in the combination *Sistrurus tergeminus* or *S. catenatus tergeminus* since Garman ('1883', 1884, pp. 118, 176) for a taxon found west of the Mississippi River (Kubatko et al., p. 3). The James account is often cited as appearing in 1823 but Woodman (2010, p. 28) has demonstrated that it was offered for sale in late December, 1822.

3. Recently, Holycross et al. (2008, p. 422) presented evidence from Bradbury's (1817, p. 70) account of his travels that the holotype of *Crotalinus catenatus* was collected on April 25, 1811, not on the prairies of the Upper Missouri but on the floodplain of the Missouri River between the mouth of the Platte River and modern-day Nebraska City, Nebraska, U.S.A. In fact there was a confusion of locality data for this snake and another (*Crotalinus viridis* Rafinesque, 1811) collected by Bradbury (1817, p. 147) and described from a single specimen that was stated by Rafinesque (1811, p. 41) to have been from the 'Upper Missouri.' Holycross et al. (2008, p. 422) provided evidence that the second snake was actually collected in what is modern-day North Dakota. These authors further demonstrated that the type locality of what is called *Crotalinus catenatus* is within the range of *Sistrurus catenatus tergeminus* and not that of the form usually called *S. c. catenatus*. Under the Principle of Priority (Article 23 of the Code), this makes *Crotalinus catenatus* a name that cannot be applied to the eastern taxon because it is a senior synonym of *Crotalus tergeminus*. While there can be no question regarding the identity of the holotype and the type locality of *Crotalinus catenatus*, that specimen is no longer extant (Holycross, 2008, p. 422).

4. The situation is complicated by the lack of agreement concerning the provenance of the syntypes of *Crotalus tergeminus*. It has been variously cited as indefinite (Minton, 1983, p. 1; Gloyd, 1955, p. 92); between the Mississippi River and the Rocky Mountains (Klauber, 1956, p. 50; McDiarmid et al. 1999, p. 325; Campbell and Lamar, 2004, p. 609); between Plateville, Weld County, and just south of Brighton, Adams County, northeastern Colorado [northeast of present day Denver] (Dundee, '1996', 1997, p. 81); or possibly along the Boyer River, in Harrison County, Iowa (Dundee, '1996', 1997, p. 8). To further complicate matters, there have been two arbitrary restrictions of the type locality, by Smith and Taylor (1950, p. 358) to Winfield, Cowley County, Kansas and by Schmidt (1953, p. 226) to the headwaters of the Arkansas River. The syntypes of *Crotalus tergeminus* no longer exist. They appear to have been part of the Charles Willson Peale Museum (the Philadelphia Museum) collection, which was sold to P.T. Barnum in 1849. They were almost certainly incinerated in the 1851 fire that destroyed Barnum's Museum (Stroud, 1992, p. 287).

5. If the name *catenatus* were to be applied to the western population the first available name for the eastern taxon is *Crotalus messasaugus* Kirtland, 1838, no type locality stated but certainly from the state of Ohio where Kirtland resided. Adler (1963) suggested that a National Museum of Natural History, U.S.A. specimen (USNM 526) collected from Mahoning County, Ohio by Kirtland might be the holotype of this taxon. The name *messasaugus* has not been used as a valid name in any publication post-1899 and its use would upset stability by replacing *Sistrurus catenatus*.

6. Kubatko et al. (2011, p. 13), apparently unfamiliar with the paper by Holycross et al. (2008), suggested on the basis of a phylogenetic analysis that *Sistrurus catenatus* and *Sistrurus tergeminus* be recognized as separate species.

7. Inasmuch as the names *Sistrurus catenatus* or *S. c. catenatus* and *Sistrurus tergeminus* or *S. c. tergeminus* have appeared in approximately 1400 works by at least 250 authors since 1895 (Zoological Record 1895–2007), universality and stability seem best served through action of the Commission to use its plenary power (Article 81 of the Code) to preserve prevailing usage by designating neotypes of known provenance for the two taxa in question. The standard procedures of the Code (Article 75) for neotype designation cannot be applied in this case because of the constraint that any specimen selected to bear the name *Crotalinus catenatus* should come from or near the original type locality (Article 75.3.6), which in that event would lie within the geographic range of the taxon currently recognized as *Sistrurus catenatus tergeminus*. In the case of *Crotalus tergeminus* it is not possible to ascertain which of the several options might be the type locality. Therefore, it seems logical to select a neotype from a definite locality near the route of the Long Expedition's return to the east from the Rocky Mountains down the course of the Arkansas River where *Sistrurus catenatus tergeminus* is definitely known to occur. The latter action could be accomplished in a separate publication as it does not require the action of the Commission. However, under Article 78.2.3 of the Code, the Commission is empowered to apply the provisions of the Code and issue an Opinion on any question of zoological nomenclature, and we believe it would be most parsimonious for the Commission to select neotypes for the two involved taxa at the same time.

8. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to designate specimen USNM 526 at the National Museum of Natural History, U.S.A. from Poland, Mahoning County, Ohio, U.S.A. as the neotype of *Crotalinus catenatus* Rafinesque, 1816;
- (2) to use its specific powers to designate specimen USNM 86472 at the National Museum of Natural History, U.S.A., from Winfield, Cowley, Kansas, U.S.A. as the neotype of *Crotalus tergeminus* Say in James, 1822;
- (3) to place on the Official List of Specific Names in Zoology the name *catenatus* as published in the binomen *Crotalinus catenatus* Rafinesque, 1811, and as defined by the neotype designated in (1)(a) above;
- (4) to place on the Official List of Specific Names in Zoology the name *tergeminus* as published in the binomen *Crotalus tergeminus* Say in James, 1822 and as defined by the neotype designated in (1)(b) above.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).